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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
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08/704,467 08/28/96 GALLAGHER C P41-90273

EXAMINER

11M1/1010

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ART UNIT	PAPER NUMBER
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1105

DATE MAILED: 10/10/97

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-23 is/are pending in the application.
Of the above, claim(s) 21-23 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-20 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d):
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of Reference Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s): 4
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

Art Unit:

This application is a CIP of S.N. 08/483,079 (filed 6/7/95), which application is a CIP of S.N. 08/324,060 (filed 11/17/94), which application is a DIV of S.N. 08/769,892 (filed 10/1/91, now U.S. 5,376,403), which application is a CIP of S.N. 07/477,678 (filed 2/9/90, now ABN). Claims 1-23 are currently pending.

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Applicant has incorrectly claimed benefit of S.N. 08/342,060 (filed 10/17/94). The proper application serial number is 08/324,060 (filed 10/17/94).

Applicant should also correct the first paragraph of the specification to reflect the correct serial number.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

Art Unit:

- I. Claims 1-20, drawn to a conductive adhesive composition, classified in class 252, subclass 512.
- II. Claims 21-22, drawn to a method of attaching discrete electronic components to an interconnect substrate, classified in class 156, subclass 60+.
- III. Claim 23, drawn to an article of manufacture, classified in class 439, subclass 55+.

The inventions are distinct, each from the other because:

Inventions of Group I and Group II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed may be used in a materially different process. Different processes include use as a conductive paint or protective conductive coating.

Inventions of Group I and Group III are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final

Art Unit:

product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a conductive paint or a protective conductive coating and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Inventions of Group III and Group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed may be made by a materially different process. The product of group III may be made with the use of a conductive adhesive which does not contain

Art Unit:

applicant's "chemically protected cross-linking agent". The product of Group III requires no such material as any chemically protected cross-linking agent would be reacted during heating.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their recognized divergent subject matter and their different classification, and because the searches required for each of these distinct groups are not coextensive, restriction for examination purposes as indicated is proper.

During a telephone conversation with Stephen Reiter on 9/30/97 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-20. Affirmation of this election must be made by applicant in responding to this Office action. Claims 21-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must

Art Unit:

be accompanied by a diligently-filed petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(h).

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are considered indefinite since the "metal additive" component specified in claim 1 overlaps in scope with either/both the "high melting point metal" component or the "low melting point metal" component. Claims in which one component reads on a second fail to meet the requirements of the second paragraph of 35 U.S.C. 112. See Ex parte Ferm et al. 162 U.S.P.Q. 504. Also, the "reactive polymer" component and the "resin" component specified in the claims overlap in scope and therefore render the claims indefinite. Applicant should better clarify each of the above components so as to be mutually exclusive of each other.

The terminology "a chemically protected crosslinking agent" is considered vague and indefinite if failing to adequately describe what types of component/compounds are encompassed in the instant claims. The skilled artisan or potential infringer would be unable to determine the metes and bounds of the claimed

Art Unit:

invention. Applicant should amend the claim language to include --wherein said chemically protected crosslinking agent is an acid or strong base which has been chemically modified by the addition of a chemically or thermally triggered species to become reactive only at or near the time the low melting point metal or alloy of the composition melts--.

To be in proper Markush form, applicant should remove the parenthesis from claims 16 and 17 and place each of the recited members in the Markush group.

The non-statutory double patenting rejection, whether of the obviousness-type or non-obviousness-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); and *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(b) and © may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78(d).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 21-22, 24-35 and 37-50 of copending

Art Unit:

Application No. 08/324,060. Although the conflicting claims are not identical, they are not patentably distinct from each other as both the claims of the instant application and those of 08/324,060 are directed to conductive compositions which may contain high melting point metal, low melting point metal, binder and chemically protected crosslinking agents. The compositions are not patentably distinct.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Evaluations of level of ordinary skill in the art requires consideration of factors such as various prior art approaches employed, types of problems encountered in the art, rapidity with which innovations are made, sophistication of technology involved, educational background of those actively working in the

Art Unit:

field, commercial success, failure of others, and the inventor's educational level.

The "person having ordinary skill" in this art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this case reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20 are rejected under 35 U.S.C. § 103 as being unpatentable over JP 53-133799 or Hicks et al (4,434,084).

The instant claims are drawn to a conductive adhesive composition comprising a high melting point powder, solder powder, a chemically protected cross-linking agent, and resin or

Art Unit:

reactive monomer or polymer. The dependant claims further specify percentages of these ingredients, specific metals, and specific cross-linking agents.

JP 53-133799 discloses a conductive coating composition containing a mixture of metal powder and solder, and a binder resin. Preferred materials include copper powder, tin/lead (63/37) solder, and epoxy resins (see page 4 of the translation). The disclosed ratio of these components is within the ranges instantly claimed. JP '799 also teaches that when using an epoxy resin, acid anhydride and amine curing agents may be added to the composition as their addition provides fluxing action during heat processing (see page 5 of the translation). The compositions are processed at temperatures between 190°C and 260°C. JP '799 also teaches that the disclosed composition serve to connect the substrate with other contacted metal parts (pages 5-6 of the translation).

Hicks et al disclose base metal coating compositions comprising a mixture of finely divided copper and tin or tin alloy, organic acid flux, organic amine and organic medium (Abstract). The proportions of these components fall within the scope of the instant claims (Col 1, line 64 to Col 2, line 14), and Hicks specifically teach that the organic acid flux must

Art Unit:

remain stable to temperatures at which the intermetallic compounds are formed (Col 3, lines 10-35).

Although neither JP '799 or Hicks specifically state that the disclosed curing/fluxing agents are "chemically protected", it is the examiner's position that the curing agents of JP '799 and the fluxing agents of Hicks meet these instant claim requirements since the processing temperatures disclosed in JP '799 appear to be the same as the processing temperatures disclosed in the instant specification (see page 28 of the instant specification) and the organic acid flux of Hicks must remain stable to temperatures at which the intermetallic compounds are formed.

Alternatively, even if the acid anhydride and amine curing agents of JP '799 or the flux materials of Hicks do not meet the instant requirements of "a chemically protected cross-linking agent", it is the examiner's position that absent a showing of superior or unexpected results, the selection or modification of known curing agents is well within the purview of the skilled artisan. Again, Hicks clearly teaches that reaction should be delayed until the melting temperature of the metals is reached.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to produce

Art Unit:

the instantly claimed compositions since the broad teachings of JP '799 or Hicks et al disclose conductive compositions containing metal powder, solder, binder resin, and curing agent, each within the claimed proportions.

In view of the foregoing, the above claims have failed to patentably distinguish over the applied art.

Applicant is reminded that any evidence to be presented in accordance with 37 C.F.R. 1.131 or 1.132 should be submitted before final rejection in order to be considered timely.

Applicant should provide signed copies of the 1.132 Declarations filed in the parent applications so that such may be made of record in this application.

The remaining references listed on forms 892 and 1449 have been reviewed by the examiner and are considered to be cumulative to or less material than the prior art references relied upon in the rejection above. Brown (4,940,498), Pennisi et al (5,136,365), JP 58-42651, Rubin (4,940,498) each disclose various fluxing agents utilized with conductive compositions containing a single metal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Kopec

Art Unit:

whose telephone number is (703) 308-1088. The examiner can normally be reached on Monday-Thursday from 7:30 AM - 6:00 PM.

If reasonable attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Lieberman, can be reached on (703) 308-2523. The fax phone number for this Group is (703) 305-3600.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

M.K.
October 1, 1997

Mark Kopec
MARK KOPEC
PATENT EXAMINER
GROUP 1100